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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,069	11/21/2003	Brian Wehrung		2247

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EXAMINER	
SHAPIRO, JEFFERY A	

ART UNIT	PAPER NUMBER
3653	

MAIL DATE	DELIVERY MODE
05/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/719,069	WEHRUNG ET AL.	
	Examiner	Art Unit	
	Jeffrey A. Shapiro	3653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8 and 30-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8 and 30-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 8 and 30-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 6,185,474 B1) in view of Soraoka et al (US 6,526,330 B2).

Regarding **Claims 8 and 35-37**, Nakamura discloses a distributed control system (see figure 1) having a host computer (30) corresponding to Applicant's higher level controller, said host computer including an exposure information management program (33), which manages jobs and communicates information in response to queries from exposure units concerning work information. See col. 5, lines 28-60. A semiconductor exposure unit (10) has an exposure work information management program (13) and an equipment control program (12) which corresponds to Applicant's lower level controller. Note that the exposure unit (10) may be construed as a "neighborhood." The local goals are construed to be formulated by the exposure management program (33) with input from elements (13, 14 and 34).

Nakamura does not expressly disclose, but Soraoka discloses the details of a wafer transfer/transport apparatus (202, 204, 208, 9, 10 and 92. See col. 5, lines 52-61, col. 7, lines 34-57 and col. 8, lines 12-21 of Soraoka. Note that zones can be construed

to be the track or rail portion near an exposure unit (10) of Nakamura or one of the bays (2) of Soraoka.

Regarding **Claims 30-32 and 34**, note that Soraoka's device necessarily accelerates and decelerates the article transporter/carrier within a particular track or rail portion and between processing stations such as between stations (100). See for example, figure 6a, which illustrates a wafer (3) being transferred from track zone (204) to track zone (208), and then to track zone (200). As a further example, figure 16 illustrates a track zone for each processor (100a and b).

Soraoka discloses a host computer at col. 9, lines 22-30 that manages all processors (100). However, each processor and track communicates with the other portions. See col. 7, line 65-col. 8, line 26.

Regarding **Claim 33**, note that the robots (10) provide rotational movement between zones. See figure 3, element (101), for example.

Both Nakamura and Soraoka are considered to be analogous art because they both concern semiconductor wafer manufacture.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have used the wafer transport system of Soraoka in the wafer manufacturing system of Nakamura.

The suggestion/motivation would have been provided by Soraoka, for example, at abstract, lines 4-7, col. 5, lines 52-61, col. 7, lines 34-57 and col. 8, lines 12-21, which describe use of a transport system for wafers in such a wafer manufacturing system as Nakamura. Additionally, one ordinarily skilled in the art would have recognized a need

to transport wafers between processing stations, therefore leading to the use of Soraoka's transport system in Nakamura's wafer manufacturing system.

Note also that whether or not the manufacturing product is a semiconductor wafer, pharmaceutical or magnetic storage disk, the system of Nakamura will still work and function as Applicant's claimed system.

Regarding routing, note that Nakamura's exposure work information management program performs optimal routing based on various factors. This program has to route the wafers to the correct exposure unit so as to have a particular batch of wafers processed.

Regarding regulation of the speeds of the various transport devices, not that the robots and transfer means of Saraoka must run by motors, which must speed up and slow down to a stop in front of a particular processing station in order to transfer wafers to a wafer robot at that processing station.

Regarding the destination announce message, note that Nakamura's figures 2 and 3, which describes a query as to whether or not the necessary work information has been received. Destination information and status can be construed to be such information that one ordinarily skilled in the art would need to use in Nakamura's system in order for it to properly transport wafers between stations.

3. Claims 8 and 30-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 6,185,474 B1) in view of Jackson et al (US 6,039,316). Nakamura discloses a distributed control system (see figure 1) having a host computer

(30) corresponding to Applicant's higher level controller, said host computer including an exposure information management program (33), which manages jobs and communicates information in response to queries from exposure units concerning work information. See col. 5, lines 28-60. A semiconductor exposure unit (10) has an exposure work information management program (13) and an equipment control program (12) which corresponds to Applicant's lower level controller. Note that the exposure unit (10) may be construed as a "neighborhood." The local goals are construed to be formulated by the exposure management program (33) with input from elements (13, 14 and 34).

Nakamura does not expressly disclose, but Jackson discloses the details of a wafer transfer/transport apparatus (100) having micro-jets (202) actuated by individual controllers/computational elements (604 and 606). There are first level controllers (620-622) are coupled to second level controller (608). See figures 1 and 6 and col. 6, line 60-col. 7, line 21 of Jackson. Note that zones can be construed to be the track or conveying surface on which said jets (202) reside. Note also that col. 3, lines 41-47 describe this system as being used with numerous objects, including semiconductor wafers. Col. 3, line 67-col. 4, line 2 describes that actuators (202) can engage a mechanical drive connected to transportation rollers. First, second and third control threads are construed to be a control thread associated with a particular sensor/actuator (202, 203) and first level computational element (604). Note also that a first control thread (604) communicates with another computational element (604) through computational element (606). Note also that one can construe first, second and third

control threads to correspond with first, second and third level computational elements (604, 606 and 610). See Jackson, figure 7, for example.

Both Nakamura and Jackson are considered to be analogous art because Nakamura concerns semiconductor wafer manufacture that requires transportation of wafers between production stations and Jackson teaches a wafer handling transporter using microelectromechanical (MEMS) devices.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to have used the wafer transport system of Jackson in the wafer manufacturing system of Nakamura.

The suggestion/motivation would have been provided by Jackson, for example, at col. 8, lines 15-40, which describe use of a transport system for wafers that vary in size in such a wafer manufacturing system as Nakamura's. Additionally, one ordinarily skilled in the art would have recognized a need to transport wafers between processing stations.

Note also that whether or not the manufacturing product is a semiconductor wafer, pharmaceutical or magnetic storage disk, the system of Nakamura will still work and function as Applicant's claimed system.

Regarding routing, note that Nakamura's exposure work information management program performs optimal routing based on various factors. This program has to route the wafers to the correct exposure unit so as to have a particular batch of wafers processed.

Regarding regulation of the speeds of the various transport devices, note that air jet actuators (202) apply forces to the object to move it, and that increasing or decreasing said forces affects the acceleration of the object and that sensor (203) senses the object. See Jackson, col. 4, line 52-col. 5, line 63.

Regarding rotation of the object, Jackson also describes rotation of the object at col. 4, lines 42-45.

Regarding the destination announce message, note that Nakamura's figures 2 and 3, which describes a query as to whether or not the necessary work information has been received. Destination information and status can be construed to be such information that one ordinarily skilled in the art would need to use in Nakamura's system in order for it to properly transport wafers between stations.

Further regarding a third control thread, note Jackson, col. 8, lines 15-39 which describe that the number of levels of control is based on the size of the object detected by the first level controllers, which other higher levels of control being established based on that reading.

Response to Arguments

4. Applicant's arguments filed 2/16/07 have been fully considered but they are not persuasive. Applicant dismisses Nakamura's system as "basically a file sharing network." However, Nakamura discloses production control program (32) that instructs the start of exposure work to the semiconductor exposure units (20). See Nakamura, col. 5, lines 60-65. Applicant appears to define the term "control thread" as a program which controls. See, for example, Applicant's paragraph 14, lines 12-17. Applicant's

independent claims call for a first, second and third control thread. Nakamura's control program (32) is construed as a first control thread.

Nakamura further includes an exposure work information management program (13) which "has a function of managing the job and a function of responding to an inquiry from other units about the exposure work information." See Nakamura, col. 5, lines 47-51. This exposure work information is not just "a file", but information used to control the processing of the semiconductors through the exposure units. Exposure work information management program (13) is construed as a second control thread that controls the work done at a particular exposure machine by translating the global requirements passed down from the production control program (32), again, construed as the first control thread. See col. 6, lines 12-29, which describes second control thread (13) inquiring whether the host computer, then another exposure unit (20) has a particular file which includes necessary information to cause a particular exposure machine to start operating. Col. 7, lines 1-4 indicates that control thread (13) contacts another control thread (23) that controls the other exposure unit (20). This meets the requirement that the control threads communicate with each other. Further, note that a third control thread is contained in equipment control program (12) and (12a). This control thread is the program that actually controls the exposure unit operation at the machine level. Therefore, program (32) is the first control thread generating global requirements to second control thread, i.e., control program (13), which is an intermediary controller that passes the global requirement down to the third control

thread, i.e, machine controller (12) by depositing the correct job information to memory (12a).

Regarding the combination with Saraoka, note that Saraoka discloses the wafer transportation system that is used throughout a manufacturing system such as Nakamura's. It would have been obvious to one of ordinary skill to include the control of this transportation system within Nakamura's control system, since one ordinarily skilled would have recognized that wafers must be transported between exposure and other work stations throughout the semiconductor manufacturing system. One ordinarily skilled also would have been led by Nakamura's disclosure and teaching to cause a control thread/program to control second transporter (202) cooperatively with first global transporter (204), and with the local third transporter, located at each exposure unit (100). Since Nakamura discloses coordinating various control threads based on the material requirements of production of semiconductors, it would have been logical to use the same material requirements to cause the control threads of the various transporters taught by Saraoka to transport semiconductors accordingly throughout the Nakamura's manufacturing system.

Regarding the combination of Nakamura and Jackson, contrary to Applicant's assertions, first level computation elements (604) communicate with other first level elements through second level computational elements (606). Applicant's claim language does not preclude such an interpretation. Additionally, zones can be construed as being defined as being made up of combinations of first, second and third level components, with separate neighborhoods communicating with each other.

Alternatively, one can construe each jet as a zone of control. Since each jet is directly controlled by one or more hierarchically superior control elements, forming a group of computational elements having overlapping zones of control, it can also be construed that the control threads communicate with each other, passing requirements based on the sensed information at each jet. See Jackson at col. 7, lines 1-20. Also, each higher level computational element can be construed as a single control thread. According to Jackson at col. 7, lines 53-60, these higher level computational elements coordinate transition of control from overlapping control zones by communicating with each other. Again, it would have been obvious to combine Nakamura with Jackson since Nakamura requires transportation of semiconductor items between exposure units. Therefore, Nakamura combined with Jackson is also considered to read on Applicant's claims.

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey A. Shapiro whose telephone number is (571)272-6943. The examiner can normally be reached on Monday-Friday, 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick H. Mackey can be reached on (571)272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAS

May 11, 2007

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